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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,795	12/14/2001	Elizabeth Acton	608-326	4355

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NIXON & VANDERHYE P.C.
8th Floor
1100 North Glebe Road
Arlington, VA 22201

EXAMINER

LISH, PETER J

ART UNIT PAPER NUMBER

1754

DATE MAILED: 01/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/014,795	ACTON ET AL.	
	Examiner	Art Unit	
	Peter J Lish	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-18, 25-30 and 32 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-18, 25-29 and 32 is/are rejected.
- 7) ☒ Claim(s) 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Applicant's arguments, filed 10/24/03 have been considered but are moot in view of the new ground(s) of rejection. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

Claims 8-16, 18, 25-29, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0,916,622 A1 taken with Gatumel et al. ("Nucleation Control in Precipitation Processes by Ultrasound").

EP '622 teaches a process for the prevention of the formation of scale on solid surfaces. The process consists essentially of adding seed crystals of a scale substance, such as barium sulfate, to an aqueous supersaturated solution of the scale substance, whereby the solution contacts the solid surfaces. The seed crystals have an average diameter of 0.05 to 100 microns.

Regarding claim 16, the ratio of the weight of seed crystals to the total weight of both the seed crystals and the depositable salts is not explicitly taught, however, it is taught that the seed crystals may be added in amounts between 0.1 to 10,000 mg per liter of water. It is therefore expected that the ratio may be within the claimed range of 10-50%.

The method of producing the seed crystals is not explicitly taught by '622. Gatumel et al., however, teach a reproducible process for the production of barium sulfate crystals having a narrow range of diameters, such that having a mean size of about 0.9 microns. The process comprises nucleating these small crystals from a supersaturated solution of barium sulfate using ultrasound to provide acoustic cavitation. The frequency of the ultrasonic vibration is about 20 kHz. The process is performed by mixing solutions of barium chloride and sodium sulfate in the

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reactor at a position just above the ultrasound emitter, wherein the supersaturated solution is formed.

While the energy density applied by the ultrasonic vibration and the time of applying ultrasonic vibration are not explicitly taught, it would have been obvious to one of ordinary skill at the time of invention to select an energy density and duration capable of ensuring efficient crystal nucleation. Doing so is viewed to be the optimization of a known process, which could have been determined through routine experimentation, and is held to be obvious by *In re Boesch*, 205 USPQ 215.

While the degree of supersaturation of the solution is not explicitly taught, it would have been obvious to one of ordinary skill at the time of invention to select an optimal degree of supersaturation, as it will determine the amount of seeds formed in the dispersion. Doing so is thus viewed to be the optimization of a known process, which could have been determined through routine experimentation, and is held to be obvious by *In re Boesch*, 205 USPQ 215.

It would have been obvious to one of ordinary skill at the time of invention to use the seed crystals produced by the process of Gatamel et al. as the seed crystals in the process of EP '622, because they meet the requirements of the desired seed crystals and are produced in a quick and reproducible manner. Additionally, it would have been obvious to use the product of one process as a reactant in another process if they are similar materials and the other process requires the product, see *In re Kamlet*, 88 USPQ 106 CCPA 1950.

Regarding claim 10, it is not explicitly taught that the seed crystals have 0.025 - 0.5 times the diameter of crystals of the same mineral salt which crystallize out from an aqueous supersaturated solution thereof in the absence of sonic or ultrasonic vibration, however, it is expected that this be the case, as the seed crystals have an average diameter within the claimed

range. Where, as here, the reference discloses all the limitations of a claim except a property or function, and the examiner cannot determine whether or not the reference inherently possesses properties which anticipate or render obvious the claimed invention, the burden of proof is shifted to the applicant, as in *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980).

Regarding claim 18, there is no positive limitation, as the claim to which it depends does not require the use of an aqueous precursor liquid.

Regarding claim 27, it is expected that the seed crystals are present in the dispersion in an amount of from 1 to 60% by weight based on the total weight of dispersion because no difference is seen between the manner in which the seed crystals of Gatumel et al. are formed and the manner in which the seed crystals of the instantly claimed invention are formed. Alternatively, it would have been obvious to one of ordinary skill at the time of invention to control the process parameters of Gatumel et al. in order to yield a desired weight percentage of seed crystals.

Regarding claims 28 and 29, it is expected that the barium sulfate seed crystals have the claimed properties, because no difference is seen between either the barium sulfate seed crystals of Gatumel et al. and those of the instantly claimed invention or the manners in which they were produced. Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the burden of proof is shifted to the applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. See *In re Best*, 195 USPQ 430.

Regarding claim 32, EP '622 requires crystal seeds within a particular size range. It therefore would have been obvious to one of ordinary skill at the time of invention to monitor the

size of the crystals produced by the process of Gatumel et al., in order to ensure that crystals with sizes outside of the required range are not being produced.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP '622 taken with Gatumel et al. as applied above and further in view of Baumgard '966.

EP 0916622 A1 teaches the addition of the seed crystals in a multitude of locations, however, it does not disclose adding the crystal seeds, and thus operating the crystal growth, in series or parallel or both.

Baumgard teaches that in series, the crystals of the first process can be used to seed crystallization in the next process (see column 5, lines 20-25). Baumgard also teaches that in parallel, there is a high space time yield of crystals, which in the case of EP '622 means fewer crystals in solution will be available to scale on the walls of the equipment. Also, there is an advantage in not interrupting the process in case one piece of equipment breaks down (see column 5, lines 25-30). It would have been obvious to one of ordinary skill in the art at the time of invention to use series or parallel, because these advantages contribute to the economic efficiency of the process itself.

Allowable Subject Matter

Claim 30 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Lish whose telephone number is 571-272-1354. The examiner can normally be reached on 9:00-6:00 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



PL

STUART L. HENDRICKSON
PRIMARY EXAMINER